An explanation for the rise in T_c in the Tl- and Bi-based high temperature superconductors

S.M. Bose

Department of Physics and Atmospheric Science

Drexel University, Philadelphia, Pennsylvania 19104

and

P. Longe

Institut de Physique, B5

Universite' de Liege, Sart-Tilman, B-4000 Liege, Belgium

Using the plasmon exchange model for the high T_c superconductor, we show that the T_c rises with an increase in the number of CuO layers per unit cell, which is in agreement with recent observations in the Tl- and Bi-based compounds. Our calculation also suggests that the sample will become superconducting in successive stages and that there is a saturation effect, i.e. that T_c cannot be raised indefinitely by increasing the number of CuO layers.